

**AMENDMENTS TO THE DRAWINGS:**

Please amend the drawings as contained in the replacement sheets containing Figures 1, 2 and 3 attached herein. No new matter has been added to the specification through the submission of these replacement drawings.

## **REMARKS**

### **I. Introduction**

Claims 9 and 10 are pending in the present application. Applicants respectfully submit that claims 9 and 10 are allowable for the following reasons.

### **II. Objection to the Drawings**

The Office Action alleges that the drawings do not comply with the requirements provided in Form PTO-948.

Applicants herewith provide replacement drawings complying with the requirements of Form PTO 948.

Regarding the contentions in Section 1b1, applicants respectfully submit that the disclosure, as filed, clearly indicates that a thimble insert assembly is a component (defined as a control component, BPRA, WABA, or plug (also known as a thimble plug assembly)) that is inserted into the repair sleeve. Applicants respectfully submit that the thimble insert assembly is not claimed and that thimble insert assemblies, their size, location and geometry are understandable by a person of ordinary skill in the art. In order to further prosecution, however, applicants respectfully submit replacement Figure 1 showing the thimble insert assembly (designated as reference element 1).

Regarding the contention in Section 1b2, the shaft 14 extends, as provided, above the top surface of the top nozzle. The extension of the shaft above the top surface of the top nozzle is clearly shown. Applicants respectfully submit that as required by MPEP 608.02 a drawing is to be submitted in an application upon filing where such drawing is necessary for the understanding of the invention. Applicants further submit that in conformance with MPEP 608.02 and the requirements of 37 C.F.R. §1.84, the scale to which a drawing is to be made must be large enough to show the mechanism without crowding. Indications such as "actual size" or "scale ½" on the drawings is not permitted since these lose their meaning with reproduction in a different format. Consequently, applicants have satisfied the requirements of 37 C.F.R. §1.84 and respectfully request withdrawal of the rejection.

Regarding the contention in Section 1b3, applicants respectfully submit that the indicia 1 clearly points to the component directly above the top nozzle. This notwithstanding, applicants have amended Figure 1 to enclose the thimble insert assembly, therefore necessitating the withdrawal of this objection.

Regarding the Objection in Section 1c, applicants furthermore respectfully submit that the shaft "14" is split as designated in Figure 1 by the removed areas of material next to the location of the tendon 20. Applicants respectfully submit that Figure 1 illustrates this feature and as such Applicants respectfully request withdrawal of the objection to the drawings. To more clearly indicate the removed areas, thereby creating the tendons 20, applicants have added cross-hatching, indicating the tendon area. Applicants furthermore respectfully submit that the "plurality of sleeve openings 28" as recited in the specification on page 5, line 1, clearly indicate these areas of removed material (as stated in the specification). The tendon area is cross-hatched for ease of reference. The Examiner has indicated a preferred reading of the specification and Applicants have amended the application in conformance with this suggestion to further prosecution. Applicants respectfully request withdrawal of this objection.

Regarding the Objection in Section 2, applicants have amended the drawings to remove the objected line as provided on page 6 of the Office Action. Applicants have further amended the drawings to designate that the guide thimble is represented by reference numeral 22. Applicants respectfully request withdrawal of the objection to the drawings.

Regarding the Objection in Section 3, applicants have included in the replacement sheets that reference character 22 designates the guide thimble in conformance with the specification. Applicants respectfully request withdrawal of the objection in Section 3.

### **III. Objection to the Specification**

The Office Action objects to the Specification wherein it is stated that new matter has been included into the specification. Applicants respectfully submit that as the feature of the thimble insert assembly can vary (as defined as a control component, BPRA, WABA, or plug) that this feature is sufficiently disclosed such that a person of skill in the art may make and/or use the invention. As provided in Figure 1, the repair sleeve extends over the top of the top nozzle, and thus fulfills its

function. In Figure 2, the top edge is lapped, thereby causing the repair sleeve to located along the top edge of the nozzle. As these parameters are clearly shown in the drawings, no new matter has been added to the specification. Applicants further submit that the previous amendments performed, did not add material at all regarding the length of the thimble insert assembly and that since no material was added, the objection should be withdrawn. The drawings themselves make clear, the subject matter that the Applicant claims and therefore the Applicants respectfully request withdrawal of the objection to the specification.

#### **IV. Objection to the Abstract**

The Office Action objects to the Abstract and offers a suggested Abstract.

Applicants have amended the Abstract in conformance with the suggested Abstract and respectfully request withdrawal of the objection.

#### **V. Objection to the Specification Under 35 U.S.C. § 112, First Paragraph**

The Office Action objects to the specification under 35 U.S.C. § 112, first paragraph as allegedly failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, (i.e. failing to provide an enabling disclosure). The Office Action alleges that is notoriously well known in the art that thimble inserts are subjected to substantial vibration and wear, as taught by United States Patent 4,902,468. It is alleged that the specification provides no description regarding the prevention of wear so as to enable the repair sleeve to be used without wear becoming a factor precluding the use of the sleeve. The Office Action further alleges that the specification fails to disclose how and in what manner contact of the sleeve with a thimble insert assembly precludes movement of control rods.

Applicants submit that the description of a minimal loss of pressure during installation does not, in and of itself, indicate that the sleeve will be used during reactor operation. Applicants submit that a sufficient gap between the thimble insert assembly and the repair sleeve is necessary to allow a correct cooling of the inside of the guide thimble when the discharged fuel assembly is stored in the pool. Furthermore, operations such as fuel sipping, conducted in a fuel pool, require clearance for water to be channeled through the fuel assembly to detect leakage. Substantial blockages prevent fission channel flow, and therefore minimal

obstructions are desired. The specification does not indicate that the sleeve will be used for such a configuration. Applicants respectfully submit that simply stating in the Office Action that it will be used, does not provide sufficient evidence of such use. Applicants respectfully request withdrawal of the rejection to specification.

Applicants furthermore submit that as is known, stainless steel stress corrosion cracking is a slow phenomenon that occurs in the presence of oxygen and is found in long duration storage of fuel assemblies in a coolant pool, when the fuel assemblies are burned (discharged) from the reactor.

Applicants respectfully traverse the unsubstantiated conclusion in the Office Action that the Applicants are in “agreement” with there is no adequate disclosure of what is a thimble insert assembly. Applicants have previously noted in past responses to Office Actions, as well as the specification, of what constitutes a thimble insert assembly. As the applicants themselves have provided such a definition of what constitutes a thimble insert assembly in the specification, and as contained on page 7, lines 7 to 9, see page 9, third full paragraph of the most recent Office Action, applicants respectfully request withdrawal of the rejection to the specification.

Applicants furthermore traverse the rejection in Section C, that alleges that the placement of tendons is optional and that the specification is not enabling. Applicants first note that Figures 1 and 2 provide two specific embodiments that present the features of the repair sleeve. Moreover, these two working embodiments automatically require withdrawal of the rejection as even a single working example in a specification is enough to preclude a rejection that states that nothing is enabled since at least that embodiment is enabled. In the present application, two embodiments are provided. Applicants respectfully direct attention to MPEP 2164.02 that requires the withdrawal of an enablement rejection when an embodiment is provided. Applicants also provide that the specification fully communicates the features of the claimed method. See, for example, page 6, line 29 to page 7, line 10 that describes the method of insertion and therefore any written description rejection should be withdrawn.

Applicants further submit that the shaft 14 has openings 28 which are areas of removed material as indicated in Figures 1 and 2. The tendons 20 project through these open areas as described in the specification on page 5, line 1 to line 11. The specification does not include any suggestion that the tendons are placed

into the sleeve at a later time. As illustrated, the shaft 14 is a single piece of material with openings 28 created by the removal of material from the shaft 14 with tendons 20 running through the areas of the shaft which do not have openings. The shaft is split into separate sections (the tendons) by the openings in the shaft of material. This notwithstanding, applicants have amended the specification in accordance with the suggested wording of the Examiner, to further prosecute the application.

Regarding rejection 7e, applicants respectfully submit that the as provided in the specification and claim 9, the repair sleeve has parts called tendons 20. The tendons 20 locally deflect into areas of the guide tube. As the repair sleeve has components that deflect, necessarily, the repair sleeve itself defects as those individual components deflect. Applicants respectfully submit that claim 9 (as well as dependent claim 10) specifies that the repair sleeve has tendons that deflect. Figures 1 and 2, further illustrate this point. Applicants further submit that the paragraph starting on page 6, line 29 states that the repair sleeve 20 is inserted into the top nozzle 12 such that the tendons 20 project into the dimple area 34. Moreover, the specification very clearly states later that the tendons 20 of the sleeve 10 flex inward. Applicants respectfully submit that as the specification and drawings make clear, the sleeve 10, through its tendons 20, would deflect locally. Applicants respectfully request withdrawal of the rejection.

#### **VI. Rejection of Claims 9 and 10 Under 35 U.S.C. §112, First Paragraph**

The Office Action rejects claim 9 and 10 as allegedly failing to comply with the enablement requirement. The Office Action states that the claims contain subject matter that was not described in the specification to enable one skilled in the art to make and/or use the invention.

For the reasons provided above, applicants respectfully submit that for the method claims 9 and 10, the specification starting on page 6, line 29 describes the method used. Moreover, applicants respectfully submit that the Office Action fails to state that undue experimentation would be required in conformance with the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261 270 (1916). For this reason alone, the rejection should be withdrawn.

Additionally, as two specific working embodiments are provided in both Figure 1 and Figure 2, an enablement rejection is improper as dictated by MPEP 2164.02.

The Office Action still further fails, wherein MPEP 2164.04 requires that in order to make a rejection, the examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. In re Wright, 999 F2d 1557, 1562, 27 USPQ 2d 1510, 1513 (fed. Cir. 1993). In re Marzocchi, 439, F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971) requires that it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in the supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure.” To this end, Applicants have provided both written and pictorial support for the subject matter of the claims and therefore request withdrawal of the rejection to claims 9 and 10.

#### **V. Rejection of Claims 9 and 10 Under 35 U.S.C. § 112, Second Paragraph**

Claims 9 and 10 were rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action states that claim 9 is vague wherein it is stated that the tendons could be separate and do not have to be part of the sleeve.

Applicants respectfully traverse this statement. The embodiments provided in both Figures 1 and 2, the claims themselves, as well as the specification all disclose tendons that are part of the repair sleeve. Moreover, as provided above, the specification itself states that the tendons 20 of the sleeve 10 flex inward. Page 7, line 3 of the specification. As the specification states that the tendons of the sleeve flex inward, applicants respectfully request withdrawal of the rejection of claims 9 and 10 as such an interpretation of the tendons not being part of the sleeve is contrary to the teachings of the specification.

Applicants furthermore traverse the Office Action statement that claim 10 does not require the prevention of only the deflection of the tendons but allows for some other deflection of the repair sleeve not disclosed. As provided above, as the tendons are part of the sleeve, page 7, line 3, the deflection of the tendon is a local

deflection of the sleeve. Applicants therefore submit that the wording of claim 10 is internally consistent with the features of the claim, as well as the description provided in the specification. Applicants respectfully request withdrawal of the rejection to claims 9 and 10.

## **VI. Rejection of Claims 9 and 10 Under 35 U.S.C. §103(a)**

Claims 9 and 10 were rejected under 35 U.S.C. §103(a) as obvious over United States Patent 4,684,498 "Paul" in view of United States Patent 6,356,614 ("Allen et al"). Applicants respectfully submit that the attempted combination of Paul and Allen et al. does not render obvious claims 9 and 10 for the following reasons.

Claim 9 recites the features of a method to repair a nuclear fuel assembly. Claim 9 recites the specific method steps of providing a repair sleeve, the repair sleeve having a shaft with a first end, a second end and a diameter, the diameter configured to fit into a guide thimble opening of a top nozzle of the fuel assembly, wherein the diameter of the shaft is dimensioned such that an exterior of the shaft fits into the guide thimble opening, wherein the shaft has at least two openings, and at least two tendons extending through the openings, the tendons configured to deflect in an instance of a horizontal load on the tendon during insertion, each of the tendons having a projection configured to be inserted into a dimple of a guide thimble sleeve and the repair sleeve having a lapped edge for installation on the top of the top nozzle of the nuclear fuel assembly; and inserting the repair sleeve in the guide thimble opening in the top nozzle of the nuclear fuel assembly such that the projections of the tendons project into the dimples of the guide thimble sleeve; and inserting a thimble insert assembly into an interior of the repair sleeve.

Paul allegedly relates to a guide thimble captured locking tube in a reconstitutable fuel assembly. Title. Paul provides a top nozzle attaching structure 46 which is placed within a top nozzle of a nuclear fuel assembly. As illustrated in Figure 5, the structure 46 is placed internally to a fuel assembly and does not provide lapped edge as required in claim 9. Paul, in fact, always requires that an adapter plate and a guide thimble upper end portion are maintained in a locking arrangement, precluding the positioning of a repair sleeve has presented in the

claims of the present invention. Paul does not disclose or even suggest any configuration relating to a repair sleeve as described in claim 9. Paul, instead, provides a locking mechanism between a top nozzle and a guide thimble. Paul does not disclose or suggest any types of repairs being performed. Moreover, Paul does not disclose or suggest the step of inserting a thimble insert assembly into an interior of the repair sleeve as Paul is merely a locking mechanism between two components. Paul, in fact, prevents any configuration of a lapped edge as such a lapped edge would actually prevent installation of the top nozzle of the fuel assembly to the rest of the fuel assembly, the prime aspect of the Paul reference. See, Col. 3, lines 35 to 40. Such a lapped edge would not allow for a “push down” locking tube that is internal. See Figure 6, for example. A lapped edge would prevent complete insertion as required in Paul for a flush exterior fit for the top nozzle as provided.

The attempted addition of the Allen et al. reference does not cure the critical defect of the Paul reference. Allen et al. provide an anchor assembly for a fuel bundle. Allen et al. provide a bolt that extends through the clamping portion 8 of the unit to allow for radially deforming a locking surface 120. As with the Paul reference, the Allen et al. reference never installs a thimble insert assembly into an interior of the repair sleeve. Allen et al. install a bolt, different than the requirements of claim 9. For this reason alone, any attempted combination of reference would not disclose or suggest all of the features of the claims. Moreover, applicants respectfully submit that a person of skill in the art would not combine the references, as the edge shaped design of Allen et al., would prevent the totally internal design of Paul from working. Such an edge would not allow for quick disconnect between the guide tubes and the top nozzle, therefore defeating the purpose of Paul.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish *prima facie* obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s)

must teach or suggest all of the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). The proposed rejections do not meet the above criteria.

It is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Office Action's generalized assertions that it would have been obvious to modify or combine the references do not properly support a 35 U.S.C. §103 rejection. It is respectfully submitted that the Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the reference relied upon. In particular, the Court in the case of In re Fine stated that:

The PTO has the burden under §103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done....

**Instead, the examiner relies on hindsight in reaching his obviousness determination.... One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art preferences in order to establish a prima facie obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art....

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if they'd be called evidence) that one of ordinary skill... would have been motivated to make the modifications...necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943, 1944(citations omitted; italics in original).

This is exactly the case here since it is believed and respectfully submitted that the present Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction, and speculation, which these cases have indicated does

not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept"--which is not the case here--there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claim subject matter to "make the combination in the matter claimed," stating that:

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the matter claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting [the] claims... under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000). Again, it is believed that there have been no such findings.

Claim 10 depends from claim 9 and therefore includes all the features of amended claim 9. Applicants respectfully submit that claim 10 is patentable for at least the reasons provided above in relation to amended claim 9. Applicants respectfully request withdrawal of the rejections to claim 9 and 10.

VII. **Conclusion**

It is respectfully submitted that all pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,  
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